

Response to Official Action

U.S. Serial No. 09/215,257

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23 SUB 2  
D 1

16. (Amended) The method of claim 1 further comprising synthesis of the two complementary strands and initiation of RNA duplex formation inside the cell.

SUB 3  
D 1

22. (Thrice Amended) A method to inhibit expression of a target gene in an invertebrate organism comprising:

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- (a) providing an invertebrate organism containing a target cell, wherein the target cell contains the target gene and the target cell is susceptible to RNA interference, and the target gene is expressed in the target cell;
  - (b) contacting said invertebrate organism with a ribonucleic acid (RNA), wherein the RNA consists essentially of a double-stranded structure formed by two separate ribonucleic acid strands and those ribonucleic acid strands are each able to specifically hybridize to the target gene and to each other; and
  - (c) introducing the RNA into the target cell, thereby inhibiting expression of the target gene.

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28. (Twice Amended) The method of claim 22 in which said double-stranded ribonucleic acid structure is at least 25 bases in length and each of the ribonucleic acid strands is able to specifically hybridize to a deoxyribonucleic acid strand of the target gene over the at least 25 bases.

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32. (Twice Amended) The method of claim 22 in which the organism is contacted with the RNA by feeding the organism food containing the RNA.

SUB 4  
D 1

39. (Thrice Amended) A kit comprising reagents for inhibiting expression of a target gene in a cell,

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wherein said kit comprises (a) means for introduction of a ribonucleic acid (RNA) into the cell in an amount sufficient to inhibit expression of the target gene, and (b) the RNA;

wherein the RNA consists essentially of a double-stranded structure formed by two separate strands with a first ribonucleotide sequence which corresponds to a nucleotide sequence of the target gene and a second ribonucleotide sequence which is complementary to

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the nucleotide sequence of the target gene, wherein the first and the second ribonucleotide sequences hybridize to each other to form the double-stranded structure.

Kindly consider the following new claims:

--47. (New) A method to inhibit expression of a target gene in a vertebrate organism comprising:

- (a) providing a vertebrate organism containing a target cell, wherein the target cell contains the target gene and the target cell is susceptible to RNA interference, and the target gene is expressed in the target cell;
- (b) providing a ribonucleic acid (RNA) consisting essentially of a double-stranded structure formed by two separate ribonucleic acid strands and those ribonucleic acid strands are each able to specifically hybridize to the target gene and to each other; and
- (c) contacting said target cell in said vertebrate organism with said RNA by directly injecting said RNA into said organism in the vicinity of said target cell such that the RNA is introduced into the target cell, thereby inhibiting expression of the target gene.

48. (New) A method to inhibit expression of a target gene in a vertebrate organism comprising:

- (a) providing a vertebrate organism containing a target cell that contacts a body cavity or interstitial space of said organism, wherein the target cell contains the target gene and the target cell is susceptible to RNA interference, and the target gene is expressed in the target cell;
- (b) providing a ribonucleic acid (RNA) consisting essentially of a double-stranded structure formed by two separate ribonucleic acid strands and those ribonucleic acid strands are each able to specifically hybridize to the target gene and to each other; and
- (c) contacting said target cell in said vertebrate organism with said RNA by introducing said RNA into said body cavity or interstitial space of said organism such that the RNA is introduced into the target cell, thereby inhibiting expression of the target gene.

49. (New) A method to inhibit expression of a target gene in a vertebrate organism comprising:

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- (a) providing a vertebrate organism containing a target cell that is accessible by the digestive tract of said organism, wherein the target cell contains the target gene and the target cell is susceptible to RNA interference, and the target gene is expressed in the target cell;
  - (b) providing a ribonucleic acid (RNA) consisting essentially of a double-stranded structure formed by two separate ribonucleic acid strands and those ribonucleic acid strands are each able to specifically hybridize to the target gene and to each other; and
  - (c) contacting said target cell in said vertebrate organism with said RNA by orally administering said RNA to said organism such that the RNA is introduced into the target cell, thereby inhibiting expression of the target gene.

50. (New) The method of claim 49 in which the RNA is introduced to said vertebrate organism by feeding a second, RNA-containing organism.

51. (New) The method of claim 50 in which the second organism is engineered to produce said double-stranded RNA.--

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